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DETAILED DESCRIPTION

[A detailed explanation of a design]

[0001]

[Field of the Invention]

This design is related with the step pedal used for an electric throttle control of a diesel-power-plant truck, and the step pedal attached in the front wall of the driver's cabin of a truck of the same formula as the conventional step pedal in detail.

[0002]

[Prior art]

A control of the rate of the propellant supplied to the cylinder in a diesel power plant is attained by adjusting the output of a fuel pump, although a throttle control is usually called. A throttle control is connected to the electronic link between a mechanical link to the step pedals and computers which connect a step pedal with a fuel pump directly, and, next, a computer controls a fuel pump.

[0003]

Before an electronic link, a step pedal is mechanically linked to a fuel pump, and the output of the propellant to which pump delivery of the operation of a step pedal is carried out by the fuel pump is changed.

A step pedal is held with a spring in a home or an idle position, and an operator only ****s a step pedal, makes the propellant output of a pump increase, and makes the output of the power of revolutions per minute and/or an engine increase. It is-like [the link to the pump of a step pedal / proportionally], and many propellants are supplied to a cylinder so that a step pedal is ****ed. Fuel supply is purely due to the demand of an operator.

[0004]

[The technical problem which a design tends to solve]

The latest trend of a diesel power plant is an electronic control of a fuel pump output. The computer control of the fuel pump is carried out, and it reacts to an input signal from a step pedal. In addition in an electron or a computer control system, an operator uses a step pedal. Instead of linking to a pump mechanically, **** of a pedal is supervised by computer. A monitoring function is attained through use of a potentiometer. A potentiometer rotates by **** of a pedal and supplies an input signal to a computer.

[0005]

Although a computer control controls the output of a fuel pump based on the input data from a potentiometer, it uses other data, such as temperature, humidity, and an engine load, as an element, makes luminous efficacy increase, performs an economical operation, and decreases radiation of the not desirable thing to the atmospheric air.

[0006]

At first, the potentiometer is arranged near the engine compartment near the fuel pump. This was a configuration which is not desirable because of the complicated mechanical link required of the link to the potentiometer of a step pedal. On the problem, the potentiometer was exposed to heat, oil, and dust, and the operating environment was also believed to become the cause of early failure of a potentiometer. The potentiometer was connected with the step pedal assembly field structure which next includes a means to supply **** of a potentiometer in response to **** of a

pedal. This pedal assembly field is attached in a floor, and design structure and arrangement had a constraint. In order to make a different potentiometer suit, the big design change was made by needing different ****. Moreover, it needed to compromise with an operator's facilities in improving design structure.

[0007]

[The means for solving a technical problem]

In the step pedal equipment whose this design controls the throttle of the internal combustion engine of a vehicle in order to solve the above-mentioned technical problem The supporting structure of one which has the base which suits in order to attach in the erection wall of the driver's seat of a vehicle, The step pedal with which is attached in the aforementioned supporting structure and the 1st pivot was equipped possible [a drive], The monitoring means with which the 2nd pivot which connects with a throttle control computer and the aforementioned computer, and it is attached in the aforementioned supporting structure, and was estranged from the 1st aforementioned pivot was equipped possible [a drive], It has a means to connect the aforementioned monitoring means and a step pedal in alignment. by that cause So that the input linearly proportional to the aforementioned computer which controls the throttle of an engine may be given The drive of a step pedal is supervised by the drive of a monitoring means in alignment, and further, it is attached in the supporting structure of aforementioned one so that the aforementioned step pedal, the aforementioned monitoring means, and the aforementioned means that carries out a link may unify and the erection wall of the driver's seat of a vehicle may be equipped with it as a unit.

[0008]

Furthermore, it sets as another design to the step pedal equipment which controls the throttle of the internal combustion engine of a vehicle. The supporting structure of one which was made to suit in order to attach in the erection wall of the driver's seat of a vehicle, The step pedal attached in the aforementioned supporting structure possible [a drive], and a throttle control computer, The aforementioned monitoring means attached in the drive shaft in the position which is been a monitoring means to supervise the drive of the aforementioned step pedal, and connects with the aforementioned computer, and the aforementioned supporting structure is equipped, and was estranged to the drive shaft of a step pedal, It has a means to connect the aforementioned monitoring means and a step pedal. the aforementioned monitoring means A potentiometer, Equip a hand of cut with the spool by which spring **** was carried out, and the aforementioned spool is connected with a potentiometer. By that cause, rotation of a spool is supervised by the potentiometer, the aforementioned spool has the minimum and the greatest rotation limit, and the aforementioned step pedal has the minimum and the greatest drive position. The motion between the minimum drive position of the aforementioned step pedal, and the maximum drive position Rather than the rotation between the minimum rotation limit of a spool, and the maximum rotation limit, carry out a drive in the domain of a predetermined [parvus] angle, and the aforementioned link means corresponds to the motion from the minimum of the aforementioned spool to the maximum. It has the means of communication which the motion from the minimum of the aforementioned step pedal to the maximum is made to be proportional in alignment, and transmits it. The minimum drive position of the aforementioned pedal, therefore the minimum rotation limit of the aforementioned spool form the idle mode of a request of an engine. It is attached in the aforementioned supporting structure, and the minimum **** position of the aforementioned spool is detected, and it connects with a direct computer, and has a detection means to display the desired idle mode regardless of the input from the aforementioned

potentiometer.

[0009]

[Gestalt of implementation of a design]

When a drawing is referred to, the ***** dull equipment 10 has ** **** 12 of the structure which is strongly attached in the front wall 11 in the driver's cabin of a diesel-power-plant power truck.

The tabular supporting structure 14 is being fixed to ** **** 12. The supporting structure 14 is extended outside from ** **** 12, and has the slot 18 fabricated by the side face 16 (see drawing 4). A slot 18 has radial limit ***** 20 and 22. being extended to the outside of a slot 18 exceeding the side face 16 -- a cylindrical shape -- it is a hub 26 and has the slot 28 on the longitudinal direction around the The pad 64 which was united with the supporting structure 14 is in the side face (refer to drawing 3) of the opposite side of the side face 16, and it is in the position which this adjusts with a hub 26. A hub 26, the supporting structure 14, and the pad 64 have the common penetration boa 30. The outside edge of a hub 26 serves as the counter bore, in order to accept ** ***** 32 (refer to drawing 4), and the pad 64 serves as the counter bore, in order to accept ** ***** 66. These characteristic features of the supporting structure 14 offer the support and the internal link for a spool and a potentiometer like [below-mentioned].

[0010]

The stud fraction 67 keeps a spacing outside from a slot 18, and is extended from the side face 16.

The 2nd boa 69 included in the stud fraction 67 of the supporting structure 14 is parallel to the penetration boa 30. The drive shaft 70 is supported in the 2nd boa 69. In accordance with the side face 16, in the upper part of a slot 18, up, the flange 88 in which the slot was attached is extended in order to attach possible [adjustment of a microswitch 84]. It is the brace fraction 13 which is projected from the low pars marginalis of ** **** 12, and this functions as ***** for restricting the drive of a step pedal. It is the aforementioned supporting structure which was mentioned above. The step pedal currently supported on the supporting structure, a spool, and a potentiometer are explained below.

[0011]

It is the configuration of a cylinder mostly and the spool 40 is equipped with the shaft 42 which has a central cavity and has the end for which it has an opening edge, and which was strongly attached in the hub 50 at the synizesis edge of a spool. A shaft 42 passes along the cavity of a spool 40, and is extended exceeding this. It projects on the radial outside from a hub 50, and the fabricated segment 52 adjoins the synizesis edge of a spool 40, and there is ***** 44 in the circumference edge of a segment 52. ***** 44 of a segment 52 is a fabricated slot which has the parallel side face, the pars-basilaris-ossis-occipitalis front face of the slot curves, and the aforementioned curve serves as the radii of a shaft 42 and the same axle. the above -- the edge 53 of the parallel side face has a notch 46

[0012]

The molding cam 48 on the circumference edge of a spool 40 is formed near the opening edge of a spool 40. The lobe 54 has projected outside from the cylindrical shape front face of a spool 40. As shown in drawing, the lobe 54 is extended covering the overall length of a spool 40. A lobe 54 is opened to the aforementioned cavity of a spool, and it has the slot arranged so that the external flange 58 of the spring 56 of a couple may be received. The spacer washer 53 separates a spring mutually, and it has dissociated from the internal surface of parietal bone of a slot 18.

[0013]

The drive arm 72 which has the ***** dull ** boa 73 is included. It is the segment 75 which is projected from the boa 73 to radial, and ***** 74 is on the circumference edge of a segment 75. ***** 74 is similar with ***** 44, it is the molding slot which has an parallel both-sides side, there is a slot which curved at the pars basilaris ossis occipitalis, and the curve is a boa 73 and the same axle. the above -- the ends 77 of an parallel both-sides side have a notch 76

[0014]

The pedal arm 78 is extended from the drive (attached with screw thread 65) arm 72 to the opposite side to the extension of a boa 73 to the segment 75. The step pedal 80 is attached in the pedal arm 78 by the pin 81 projected through the pedal arm 78, and the receipt lug 82 is in the pars basilaris ossis occipitalis of the step pedal 80 (refer to drawing 2).

The spring 83 is *****ing the step pedal 80 on the mating face 85 which had the angle given on the pedal arm 78.

[0015]

the flexible link 90 of the gestalt of a cable is " horizontally fixed at the ends, respectively -- it has ** 92" ***** 92 is *****ed to the notches 46 and 76 of ***** 44 and 74, inserts the aforementioned cable in the aforementioned slot of the aforementioned ***** , and, thereby, offers the link between a spool 40 and the component (72, 78, 80) of a step pedal.

[0016]

As mentioned above, a spool 40 has the spring 56 and the washer 53 which are inserted in the cavernous section of a spool and which were rolled spirally, and *****s them into the slot of a lobe 54 by the outside flange 58 of the aforementioned spring. The inside flange of a spring 56 has got into the slot 28 of a hub 26. The spool shaft 42 is attached in glue-stock ***** 32 and 66 which can be rotated, and is held by the retainer 43 at shaft orientations. A shaft 42 is extended to the input shaft of the potentiometer 60 attached in the pad 64 by the fastener 62, and is connected with this.

[0017]

A spring 56 is in the status restricted when a lobe 54 *****ed to limit ***** 20, and applies turning effort to a spool 40 according to rotation of a spool 40. The rotation position of this spool, i.e., the rotation position of a potentiometer, is called a home position or an idle position (since both are combined).

[0018]

The microswitch 84 is attached in a flange 88 possible [adjustment] by the fastener with a screw thread. The control lever 86 of a microswitch *****s with the cam 48 of a spool 40, and it has consistency. When a spool 40 and the potentiometer 60 are in a home or an idle position, a control lever 86 operates a microswitch and, thereby, supplies an idle mode execution signal to a computer by the link line 94.

[0019]

The drive arm 72 is attached in the drive shaft 70 projected in the 2nd boa 69 of the supporting structure 14 by glue-stock ***** 71 which can be rotated. The drive shaft 70 has a retainer 79 and is fixing the drive arm 72 to a shaft 70.

[0020]

***** 44 and 74 is adjusted mutually and adjusts the flexible link 90 in Mizouchi of ***** 44 by which ***** 92 which *****s possible [a slide] adhered to the notches 46 and 76 of ***** 44.

[0021]

During an operation, the step pedal 80 is *****ed and the drive arm 72 carries out a drive to the

periphery of the drive shaft 70. ***** 74 moves, this is transmitted to ***** 44 through the flexible link 90, **** of a spool 40 arises, and, next, a spool 40 is made for this drive movement to **** a potentiometer 60. Limit ***** 22 in a slot 18 restricts **** of a spool 40. The grade of **** between limit *****s 20 and 22 is ordered by **** needed by the potentiometer between the minimum value of an output, and maximum.

[0022]

If the step pedal 80 is *****ed completely, it will **** to the maximum allowed a spool and a potentiometer, and the **** will be restricted by limit ***** 22. The signal for the maximum engine speeds is supplied to a computer 93 through the link line 95 by this maximum ****. Non-phase adjustment is possible for **** of a step pedal from idle rotation to the maximum rotation. The rate of the rotational frequency of an engine is proportional to a move of a pedal, that is, is based on a response of the computer which supervises spool **** of a computer.

[0023]

The drive arm in a desirable example moves only the ideal angle of 27 degrees. This is considered to be the safe and comfortable best configuration to an operator's use. A time mechanical moment required for a potentiometer 60 determines the amount of each rotation of a spool 40. In the gestalt of desirable enforcement, **** of 53 degrees is required for the aforementioned potentiometer.

Therefore, it is separated of limit ***** 20 and 22 only from the amendment angle which took into consideration the width of face of a plus and the lobe 54 53 degrees in the angle orientation. Therefore, the ratio of a radial distance of the front face where ***** 74 to a distance radial [on the corresponding front face of a curve of ***** 44] curved is 2 to 1, respectively. Having carried out additional [of the rotation which travels to a spool] takes into consideration "a loss of movement" in the link component of the flexible link produced by the permissible tolerance over a fitting, and the aforementioned *****.

[0024]

The adjustment possibility of the proportion of the above-mentioned radius and a gap of the angle of limit ***** provide a different potentiometer with an applicable electronic throttle control easily.

Although the configuration of the supporting structure offers a design of a sag formula pedal, it is not limited to the configuration.

[0025]

Since a microswitch 84 is a safety when a potentiometer breaks down, it offers an idle mode execution signal. As long as a step pedal is in home ***** regardless of the signal which occurs by the potentiometer, a switch 84 sends a signal to a computer 93 through a link line, puts a cable 94 on the desired idle mode, and, thereby, disregards a potentiometer.

[0026]

The double spring 56 is offered for a safety when one spring breaks down. It is a suitable amount for torque to return a spool to a home position or idle ***** with one spring.

[0027]

Other configurations become clear from an above-mentioned indication. Therefore, the domain of this design is not restricted to a drawing and a detailed explanation, but is determined by publication of a utility-model registration claim.

[Utility-model registration claim]

[Claim 1] In the step pedal equipment which controls the throttle of the internal combustion engine of a vehicle The supporting structure of one which has the base which suits in order to attach in the erection wall of the driver's seat of a vehicle, The step pedal with which is attached in the aforementioned supporting structure and the 1st pivot was equipped possible [a drive], The monitoring means with which the 2nd pivot which connects with the computer which carries out a throttle control and the aforementioned computer of an engine, and it is attached in the aforementioned supporting structure, and was estranged from the 1st aforementioned pivot was equipped possible [a drive], It has a means to connect the aforementioned monitoring means and a step pedal in alignment. by that cause The drive of a step pedal is supervised by the drive of a monitoring means in alignment so that the input linearly proportional to the aforementioned computer may be given. Furthermore, step pedal equipment which is characterized by being attached in the supporting structure of aforementioned one so that the aforementioned step pedal, the aforementioned monitoring means, and the aforementioned means that carries out a link may unify and the erection wall of the driver's seat of a vehicle may be equipped with it as a unit and which controls the throttle of the internal combustion engine of a vehicle.

[Claim 2] In the step pedal equipment which controls the throttle of the internal combustion engine of a vehicle The supporting structure of one which was made to suit in order to attach in the erection wall of the driver's seat of a vehicle, The step pedal attached in the aforementioned supporting structure possible [a drive], and the computer which carries out a throttle control, The aforementioned monitoring means attached in the drive shaft in the position which is been a monitoring means to supervise the drive of the aforementioned step pedal, and connects with the aforementioned computer, and the aforementioned supporting structure is equipped, and was estranged to the drive shaft of a step pedal, It has a means to connect the aforementioned monitoring means and a step pedal. the aforementioned monitoring means A potentiometer, Equip a hand of cut with the spool by which spring **** was carried out, and the aforementioned spool is connected with a potentiometer. By that cause, rotation of a spool is supervised by the potentiometer, the aforementioned spool has the minimum and the greatest rotation limit, and the aforementioned step pedal has the minimum and the greatest drive position. The motion between the minimum drive position of the aforementioned step pedal, and the maximum drive position Rather than the rotation between the minimum rotation limit of a spool, and the maximum rotation limit, carry out a drive in the domain of a predetermined [parvus] angle, and the aforementioned link means corresponds to the motion from the minimum of the aforementioned spool to the maximum. It has the means of communication which the motion from the minimum of the aforementioned step pedal to the maximum is made to be proportional in alignment, and transmits it. The minimum drive position of the aforementioned pedal, therefore the minimum rotation limit of the aforementioned spool form the idle mode of a request of an engine. Step pedal equipment characterized by being attached in the aforementioned supporting structure, and detecting the minimum **** position of the aforementioned spool, and connecting with a direct computer, and having a detection means to display the desired idle mode regardless of the input from the aforementioned potentiometer.

[Claim 3] In the step pedal equipment of a publication, the aforementioned link means comes to prepare the flexible link between the aforementioned spool and a step pedal for a claim 2. The 1st distance from the time driving axle of the aforementioned spool is determined that the link to

the aforementioned spool of the aforementioned flexible link will become efficient. The link to the aforementioned step pedal of the aforementioned flexible link determines the 2nd distance from the drive shaft of the aforementioned step pedal. Equipment whose distance as which above 1st was determined and distance as which the 2nd was determined are characterized by having the proportion corresponding to the proportion of the angle move from the minimum to the aforementioned step pedal and the aforementioned spool to the maximum, respectively.

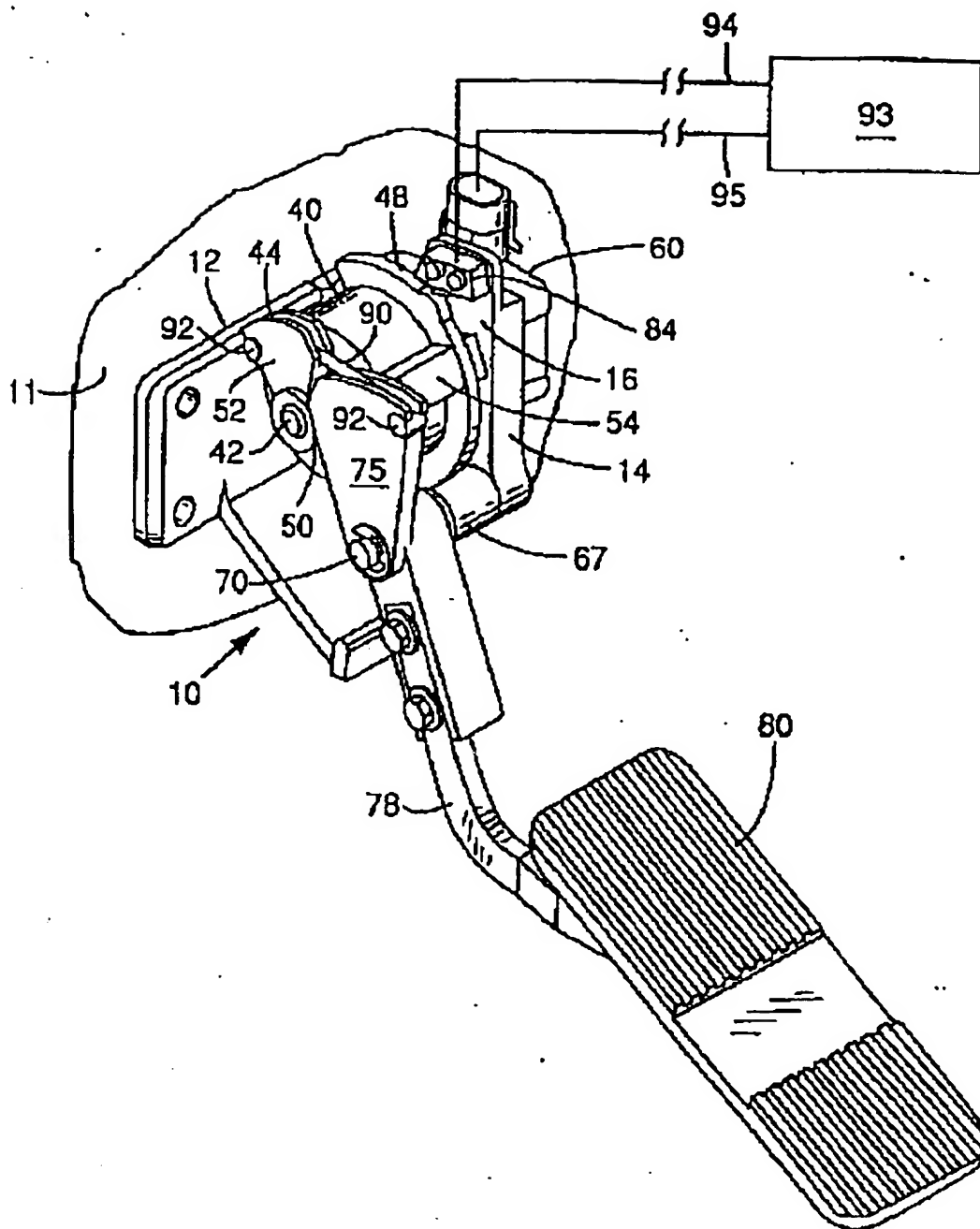
[Claim 4] In step pedal equipment given in a claim 3, it is shown in the curved **** front face on which each aforementioned spool and the aforementioned step pedal were equipped with the efficient link of the aforementioned flexible link. The front face which carried out [aforementioned] the curve receives the aforementioned spool and the aforementioned step pedal, respectively. It is formed as a distance radial [corresponding to the distance as which the above 1st was determined, and the distance as which the above 2nd was determined]. Equipment characterized by ****ing at a tangential direction to each on the front face of **** where the aforementioned flexible link ran aground on the aforementioned **** front face, and the aforementioned flexible link let pass and carried out [aforementioned] the curve of the whole motion from the minimum of the aforementioned spool and the aforementioned step pedal to the maximum by that cause.

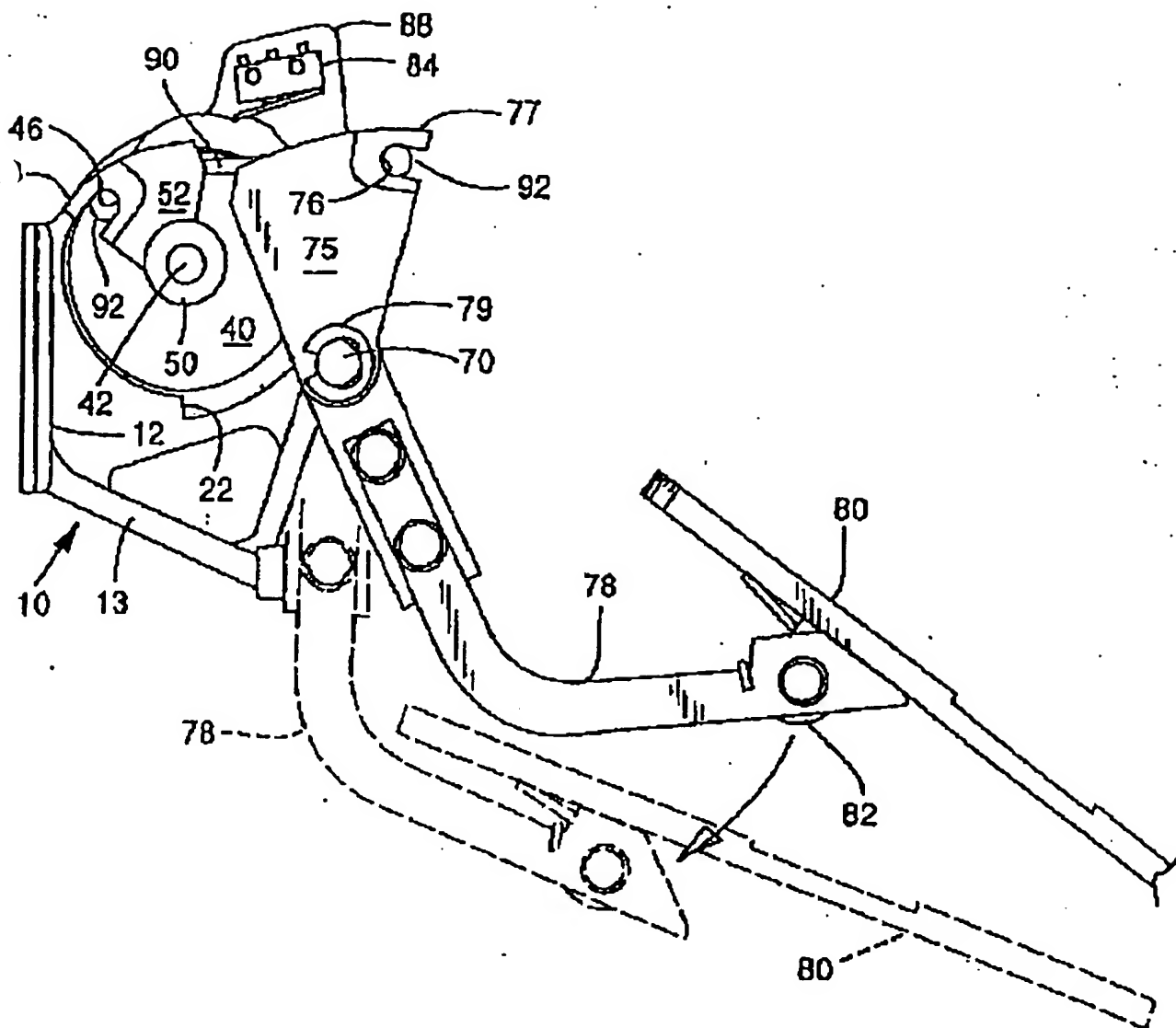
[Claim 5] It is attached in the aforementioned supporting structure which has the aforementioned spool in a claim 4 ahead of the drive fraction of the aforementioned step pedal in the step pedal equipment of a publication possible [****]. The drive link section of a step pedal is prepared for the aforementioned step pedal in the aforementioned arm fraction including a pedal fraction and an arm fraction. The extension of an arm fraction projects exceeding the aforementioned drive link section, and the extension of the aforementioned arm fraction is equipped with the **** front face of the aforementioned step pedal. Step pedal equipment characterized by for the force to which the drive of the aforementioned pedal fraction is carried out to the front by that cause carrying out the drive of the extension of the aforementioned arm fraction to back, lengthening the aforementioned flexible link, and making it **** the aforementioned spool.

[Claim 6] In the step pedal equipment which controls indirectly the throttle of the internal combustion engine controlled directly by computer The installation **s base is included in the erection wall of the truck where the fabricated supporting structure obtains power with an internal combustion engine. Project from the aforementioned base, a spool is attached in the aforementioned tabular support section possible [****], and the tabular support section forms a time driving axle. A shaft is fixed to the aforementioned spool and it projects through the boa in the aforementioned tabular support section. A potentiometer is connected with the aforementioned time driving axle on the side face of the opposite side of the aforementioned tabular support section. **** of the aforementioned supporting structure forms the minimum of the aforementioned spool, and the greatest **** position. A spring **** means ****s the aforementioned spool in the aforementioned minimum position, the arm of a step pedal is attached in the aforementioned tabular support section possible [a drive], and the pivot which kept the spacing in parallel with the aforementioned time driving axle of the aforementioned spool is formed. It has the upper part extended to the upper part of the low section and the aforementioned drive where the aforementioned arm is extended under the aforementioned pivot. The **** fraction into which a step pedal is attached in the aforementioned low section, and the 1st on the aforementioned spool curved The radius extended from the axis of the time driving axle of the aforementioned spool ****s, and the **** fraction into which the aforementioned upper part of the arm of the aforementioned step pedal curved is ****ed by the radius extended

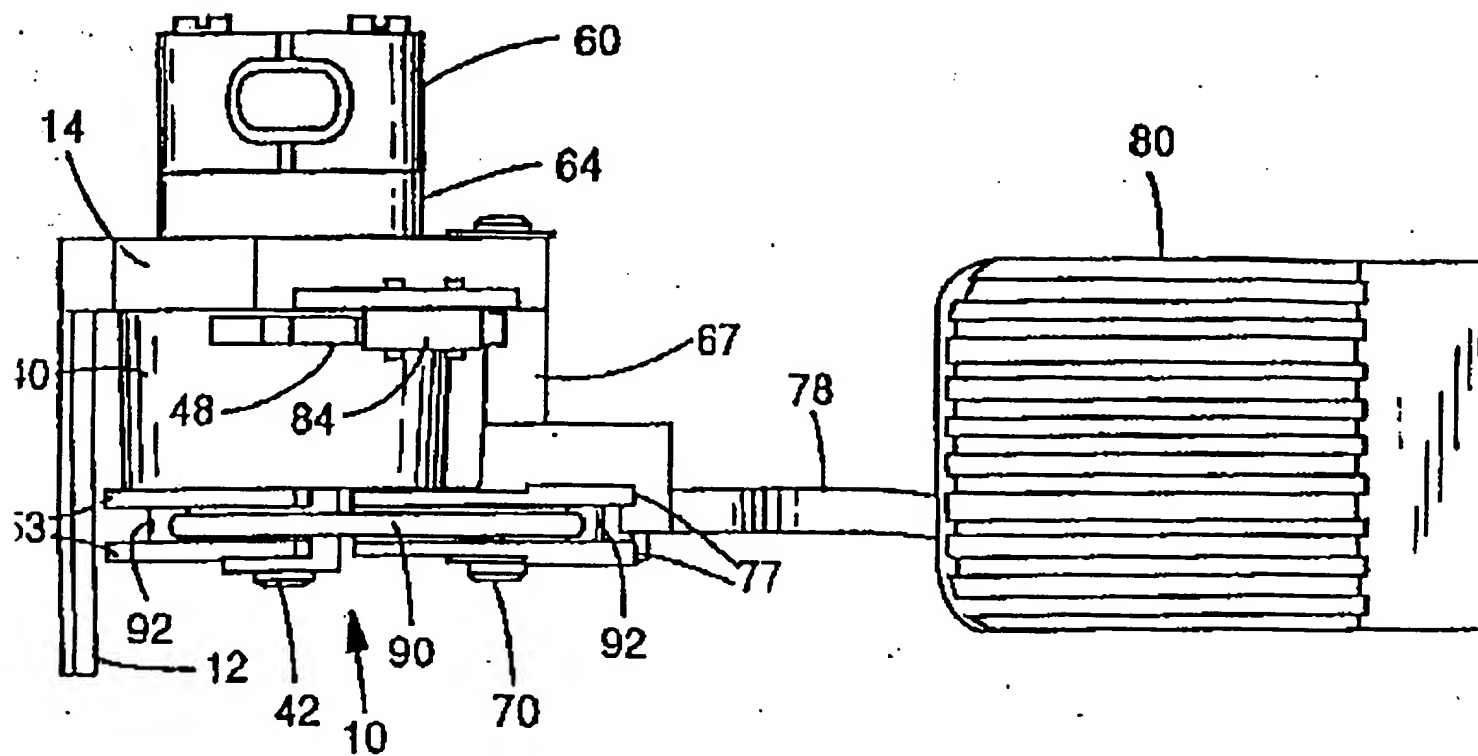
from the drive axis of the aforementioned arm. A flexible link is attached in the aforementioned spool and the upper part of the aforementioned arm. The aforementioned flexible link is extended exceeding the above 1st and the 2nd curve **** fraction. The **** fraction into which the above 1st and the 2nd curved is constituted relatively, and the aforementioned flexible link projects as a tangent to parts for both of bend over the whole **** of the aforementioned spool between the minimum and the greatest position by that cause. Step pedal equipment whose aforementioned potentiometer it has a computer, the aforementioned potentiometer is connected with the aforementioned computer, and is characterized by supervising the **** position of the aforementioned spool shaft generated when the aforementioned spool rotates between the minimum and the greatest position.

[Claim 7] Step pedal equipment which the detection equipment of the aforementioned tabular support section detects the minimum position of the aforementioned spool, and the aforementioned detection equipment is connected with the aforementioned computer in step pedal equipment given in a claim 6, and inputs the minimum position of the aforementioned spool regardless of the aforementioned potentiometer.

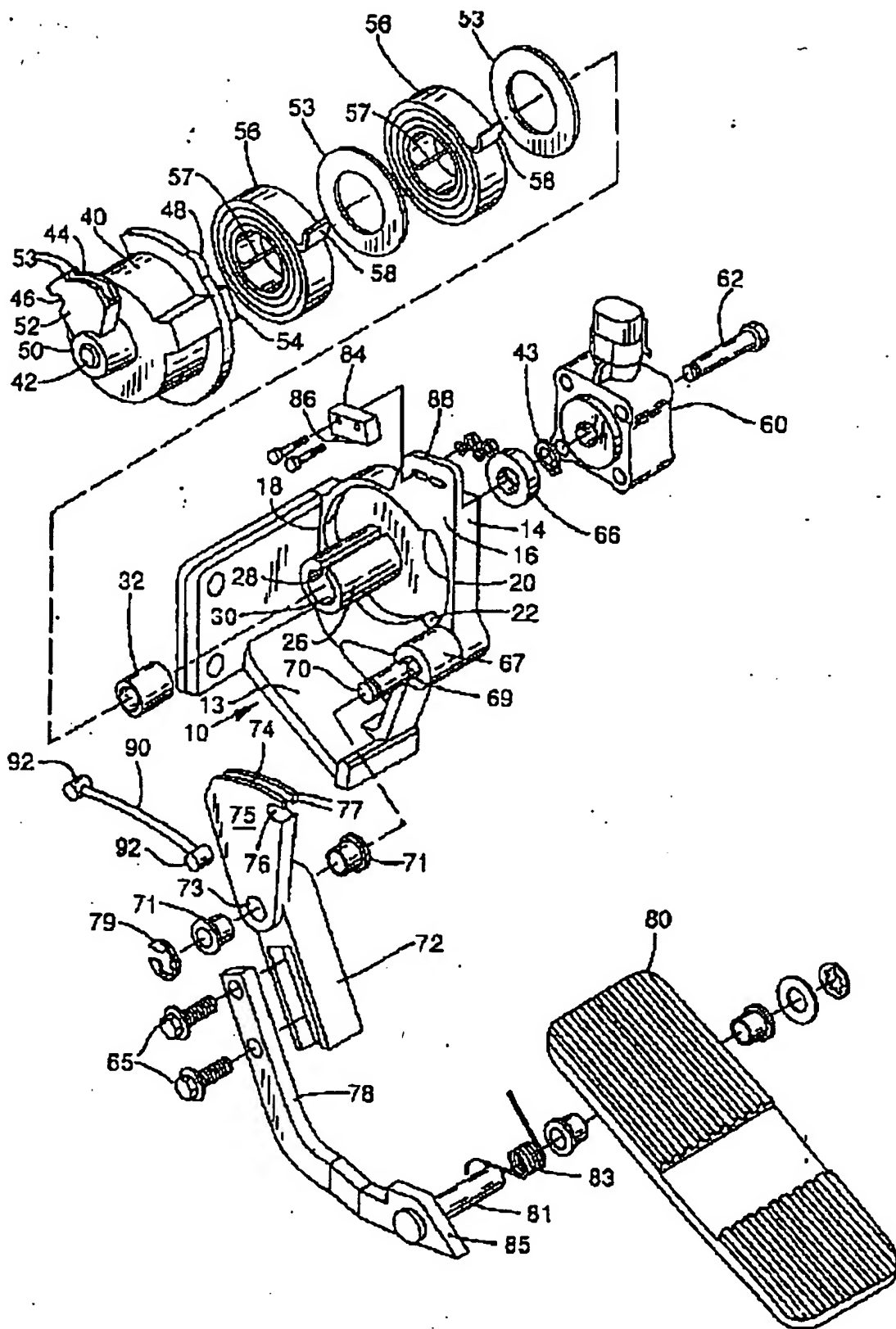




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